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U.S. Department of Transportation, Docket Operations
West Building Ground Floor, Room W12-140
1200 New Jersey Ave., SE
Washington, DC 20590

Re: Request to Renew, Exemption under Part 11 of the Federal Aviation Regulations

Dear Sir or Madam:

Texas Parks and Wildlife Department, Wildlife Division (TPWD) an operator of a Small Unmanned Aircraft System (sUAS) hereby request to renew an exemption from certain provisions of 14 CFR §107 and 14 CFR §137 to operate a sUAS for prescribed burn operations to aid in land management activities. The requests for exemption is very similar to that granted in Exemption No. 18506, Regulatory Docket No. FAA-2020-0117 for Texas Parks and Wildlife Department. Also Exemption No. 17643A, Regulatory Docket No. FAA-2017-0276 for Drone Amplified, INC. which is the manufacturer of the prescribed burn ignition system we are using.

TPWD asks that the FAA renew its petition because: (1) granting this request would benefit the public as a whole and increase the safety associated with prescribed fire and; (2) granting the exemption would not adversely affect safety because the exemption will provide a level of safety greater than or equal to the existing rules.

The contact information for the Petitioner is as follows:

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1. Description of Petitioner

TPWD is the principal State agency whose mission is to manage and conserve the natural and cultural resources of Texas and to provide hunting, fishing and outdoor recreation opportunities for the use and enjoyment of present and future generations.. Fire is essential to managing the majority of the Department's 1.4 million acres, which includes 52 Wildlife Management Areas and 94 State Parks across the State. Most of these areas are remote and rural in nature.

TPWD Wildland Fire Management is currently administered under the Divisions of Wildlife and State Parks and protects and manages burnable acres on all Department lands. The Department also provides education and training to private landowners on the implementation of prescribed fire through the Department's Technical Guidance program. Additionally, TPWD Wildland Fire Management provides mutual aid to other federal, state and local fire management agencies through cooperating agreements and alignment with the National Wildfire Coordinating Group (NWCG), a consortium of federal and state fire managers that determines national standards for wildland fire training and operations.

The Department's team of fire management professionals have significant expertise not only in fire planning and operations, but in a range of scientific and technical areas, including fire science and ecology, smoke management, wildlife biology, forestry, and range conservation.

The Wildlife Division of TPWD operates sUAS, also known as drones, as part of their regular operations to aid in the management of wildlife and other natural resources on public and private lands. Operators are responsible for maintaining aircraft in their possession as well as

keeping required flight documentation. As a state government entity, the Wildlife Division operates under Part 107 of the Federal Aviation Administration (FAA) Regulations. As per this FAA guideline, all UAS operators within the Division must either hold a current Remote Pilot Certificate with a sUAS rating him/herself or operate a sUAS only when under the direct supervision of another Wildlife staff person who has his/her Remote Pilot Certificate. Division sUAS operators follow all procedures established by the FAA for registering their UAS, and within TPWD for registering themselves and their UASs with the agency.

https://tpwd.texas.gov/landwater/land/wildland_fire_management/

Over the past few years Division staff sUAS operators have developed skills in the operation of several makes and models of sUAS. The primary mission profile has been wildlife surveys, mapping, thermal imaging and fire surveillance. At this point in time TPWD is seeking to use sUAS platforms to increase prescribed fire capacity, safety and efficiency. This in part will be through the use of Aerial Ignition by dropping plastic sphere ignition devices (PSD) to fire interior areas of prescribed fires. These areas are either inaccessible or unsafe for personnel to conduct ground ignition operations. Though the Department has a capable helicopter it is not often available and recent history of serious accidents associated with aerial ignition have led us to reevaluate the risk to personnel in the mission flight profile.

2 Description of Proposed Operation

The TPWD Wildlife Division has one (1) sUAS a (DJI Matrice 600 Pro) capable of conducting Aerial Ignition missions. This sUAS carries an aerial ignition system (Ignis, by Drone Amplified, INC <https://droneamplified.com/>) that consists of commercially available PSDs (<http://www.sei-ind.com/products/premo-fire-balls> for example) and the ability to inject and drop them to ignite an interior ignition as part of a larger prescribed burn. The PSDs are commercially available and already used by standard category manned helicopters to perform aerial ignitions. The PSDs are inert until injected with a specific fluid after which cause ignition within 30-60 seconds. The onboard injection system gives more than sufficient time to safely drop the injected PSD before it ignites. We use PSDs due to their proven track record of safety in aerial ignition applications.

We will perform interior ignitions as part of much larger prescribed fire operations. Prescribed fires are used as a land management tool to prevent buildup of fuel that could lead to uncontrolled wildfires and are also used to restore natural habitats by eliminating invasive species that are not fire tolerant. Prescribed fires require extensive planning and approval from state and federal regulators to ensure safe operations. A typical prescribed fire is started by a group of fire personnel who start a base line fire to establish a burn perimeter. After a safety perimeter is established, prescribed burns require multiple ignitions of the interior of the burn area. For small scale burns this is done by a person walking or driving an ATV/UTV into the middle of this area and then using a drip torch to ignite it. For large scale burns this is often performed by sending a full sized manned helicopter into the interior to perform the ignition. Both of these activities are the most dangerous part of prescribed fires.

This system will reduce the risk to fire personnel by using a sUAS to fly to the interior of the ignition area to drop the small PSDs to start the interior ignition. All operations can be

performed:

- with line of sight operation,
- during the day,
- at altitudes under 400 feet AGL,
- and in sparsely populated areas that are being burned as part of the prescribed burn.

In addition, we have numerous safety systems in place to safely handle emergencies as discussed in Section 4.

All pilots will hold remote pilot in command certificate with a small UAS rating in accordance with 14 CFR §107. As prior discussions with the FAA indicates that performing these ignitions may also be considered dispensing economic poisons for agricultural operations, we have applied for an Agricultural Aircraft Operations certificate as required by 14 CFR §137. In order to perform the proposed operation, we seek relief from some parts of these regulations.

3. Public Interest

Granting this Petition is in the public interest, specifically in that we will:

1. **Increase safety:** The interior ignitions that we will perform are currently performed either by people on the ground who walk/drive into the interior of an active fire or by full sized manned helicopters that must fly at extremely low altitudes near fires to perform these ignitions. Each year there are many injuries and numerous deaths that result from these activities. We will significantly reduce the need for these dangerous activities and will allow the operators to be safely outside the perimeter of the fire.
2. **Reduce cost:** Manned helicopter operation over fire is a very costly activity, in addition to being high risk. Operations of the Drone Amplified Ignis sUAS ignition system costs significantly less than that of manned helicopters. Reducing the cost of aerial interior ignitions is in the public's interest because it will enable more prescribed burns, reducing the chances for uncontrolled wildfires.
3. **Increase access:** The lower cost will also allow fire fighters that currently cannot afford helicopter ignition to use sUAS ignition techniques. This will increase their safety by reducing the amount of interior hand ignitions required for prescribed fires. In addition, since there are relatively few days in a year that prescribed fires can be performed, helicopters are often unavailable during these short periods due to the high demand. We will increase the availability of safe and low cost aerial ignition.

4. Level of Safety

The proposed operation will not adversely affect safety because the exemption will provide a level of safety greater than or equal to the existing rules. In this section we discuss three main aspects of safety; 1) pilot qualifications and operating environment, 2) vehicle and safety systems, and 3) possible risks and steps we have taken to mitigate these risks.

4.1 Pilot Qualifications and Operating Environment

All of our remote pilots in command (PICs) that will operate the sUAS for prescribed fire ignition will hold a remote PIC certificate with a small UAS rating in accordance with 14 CFR §107. In

addition, when conducting commercial agricultural aircraft applications to perform prescribed burns, we will obtain a Part 137 Agricultural Aircraft Operations certificate and will ensure its pilots will meet all of the requirements of 14 CFR §137 that are not exempted.

We also will ensure that all pilots go through sUAS flight training. This training involves both manual flight control operation and GPS waypoint navigation and flight planning. After this training is complete, pilots learn how to operate the prescribed fire ignition sUAS and their performance is tested and evaluated. Periodic flight reviews ensure that a high degree of proficiency is maintained.

All Division sUAS pilots operating this system will be qualified NWCG firefighters and prescribed fire practitioners. These fire positions require substantial initial training, experience, field certification, fitness, medical standards and regular recurrent training.

All Division sUAS pilots have been subject to an extensive preemployment criminal background check.

We will also require additional proficiency beyond that required by Part 107. Similar to the requirements of 14 CFR §61.127, we will require all of our pilots to demonstrate multi-rotor proficiency in: preflight preparation, preflight procedures, heliport operations, hovering maneuvers, takeoffs, landings, go-rounds, performance maneuvers, navigation, emergency operations, special operations, and post flight procedures.

We have also established aeronautical experience requirements, which are not present in 14 CFR §107. These regulations are guided by 14 CFR §61.129(c), which for a commercial helicopter pilot certificate requires logging of at least 150 hours as a pilot, but only 50 hours (minimum) in a helicopter, of which at least 35 must be as PIC. As the sUAS are significantly less complex than manned helicopters, the pilots will be able to achieve a comparable level of experience and safety in less time. We will require a minimum of 10 hours of PIC time on a multi-rotor system and at least 20 take-offs and landings.

We have also established currency requirements, guided by 14 CFR §61.57 as these are not required by Part 107. Specifically, we require that pilots performing the proposed operations need to have made at least three takeoffs and three landings within the preceding 90 days. In addition to the aviation requirements, we require that all of our pilots are fire practitioners and are knowledgeable about prescribed fire operations and possible risks that may occur. Our standard operating procedures also require that the sUAS pilot is part of the prescribed fire briefing activities before ignitions or flights take place.

We also specifically designate a Firing Boss (FIRB) as part of all sUAS prescribed fire ignition activities. The FIRB is responsible for coordinating flight activities with the rest of practitioners. This lowers the workload on the PIC and provides a single interface between the crew and the pilot.

Each flight will also have a designated Rally Point (also known as a “home” location). The sUAS will be programmed with a default return-to-Rally Point in case of lost link with the sUAS unless another location is deemed as a safer emergency landing location (e.g. within the burn perimeter). See Section 4.3 for discussion of lost link and communications procedures. The fire FIRB and PIC are typically stationed at the Rally Point. Visual observers (VOs) may be stationed at other locations as needed to ensure clear observation of the sUAS and the surrounding airspace as required in 14 CFR §107. The Rally Point will have the necessary water and other fire extinguishing equipment to ensure the safety of property and people in the vicinity of the Rally Point. The FIRB will be in charge of ensuring that the Rally Point is clear of bystanders and is a safe location for normal and emergency landings.

In terms of operational environment, the operations where prescribed fires will occur are in remote and sparsely populated locations. These locations have also already been approved for prescribed burns, which requires that the area be secured and that appropriate actions be taken to ensure that there are no people within or near the burn perimeter. This goes far beyond the standard requirements for Part 107 sUAS operations and provides an even greater level of safety.

4.2 Vehicle and System Safety

We are using a DJI Matrice 600, which has been approved in a number of other exemption requests. DJI Matrice aircraft have a strong track record of safety and reliability. These aircraft have a maximum takeoff weight of 33.3lbs (including payload), which is well under the 55lbs limit that can be operated under part 107 rules for non-agricultural aircraft operations. In addition, we follow the pre-flight inspection, maintenance, and operational procedure documents for the aircraft as provided by DJI and for the Drone Amplified Ignis payload by following their operation procedures.

The sUAS, payload and associated materials are secured in an enclosed trailer that is locked when not in use. The trailer is stored on a secure compound under TPWD control when not assigned to prescribed fire missions.

The DJI Matrice 600 can be programmed to fly GPS waypoints or the PIC can fly the sUAS manually. At any time the PIC can takeover manual flight controls. If the link to the sUAS is lost, the sUAS will initiate a Return-to-Home procedure, which is setup at the start to ensure the sUAS will return to the designated Rally Point. The altitude at which the vehicle returns to the Rally Point is configured at the start of the mission to ensure a safe altitude that is both above terrain features, but below 400ft AGL. The operator can interrupt the Return-to-Home procedure and regain control over the aircraft if the remote control signal is recovered.

We use the Drone Amplified Ignis PSD system to inject and dispense PSDs. Each system undergoes rigorous testing by the manufacturer and integrates safety features into hardware, software, the flight planning App, and the emergency procedures (see Section 4.3). Specifically, the Ignis on the M600 mechanism is equipped with:

- Redundant GPS that allows geo-fencing to prevent the user from starting an injection

sequence when outside of the predefined prescribed burn boundary.

- Onboard sensing to detect any possible jams in the mechanism. If a jam is detected, the system will immediately halt the current injection sequence, perform recovery operations, and will prevent further injection attempts.
- Encrypted communication between the ground controller and the ignition system to prevent any inadvertent or malicious injection commands.
- Onboard temperature sensors to monitor the ignition system and critical components.
- Fire resistant materials between the injection system and the sUAS for added safety.
- Remotely triggered ejection system to drop the ignition system from the sUAS if necessary (similar to those used by piloted helicopters to jettison current ignition systems).

In addition to these safety systems, we consider the sUAS and the ignition system dispensable in the case of emergencies. One of the key concerns during a sUAS crash is the possibilities of fire caused by the onboard batteries. Post-crash sUAS fires are of significantly less concern in the context of prescribed fire operations if the sUAS can perform a controlled crash into a previously ignited, currently burning, or planned to be burned location. As such, we consider a controlled descent and crash into one of these areas a safe last-ditch emergency action. While this may result in a total loss of the sUAS, this would have minimal risk to ground personnel, property, and other aircraft as the area is already burning and personnel are not present.

4.3 Risks and Mitigation Strategies

Our pre-flight preparation for emergencies precede our outline of possible risks and our mitigation strategies.

4.3.1 Pre-Flight Preparation for Emergencies

In addition to the standard preflight inspections that are performed to ensure that the sUAS is in a safe condition to fly (as required by 14 CFR §107.49), Drone Amplified has developed, and we use, detailed checklists for using Ignis and preparing the crew, area, and sUAS for possible emergencies. This includes:

All flight crew are briefed on the prescribed fire plan.

All flight crew are briefed on the flight plan and emergency procedures.

Flight area clear of bystanders.

People outside the flight area, but in the vicinity notified of intent to fly and perform prescribed burns. (most of the time our burn areas are closed to the public.)

Area inspected for flight safety.

Area inspected for fire safety.

Rally Point is setup with fire safety equipment (fire extinguisher, water, shovels, etc).

Make sure PIC, VOs, and FIRB have working radios / cell phones in case of emergency and have the phone numbers of: Nearby airports, fire departments, and Air Traffic Control (ATC).

4.3.2 Risk: Inclement Weather

Mitigation: Standard prescribed fire conditions require low winds (typically less than 15 knt), no precipitation, and a higher than Visual Flight Rule (VFR) minimum visibility and cloud ceiling for

the duration of the planned prescribed fire. This reduces the risk of inclement weather. In addition, during the pre-flight and pre-burn briefings we outline alternative plans for performing or terminating the prescribed burn in case the sUAS is unable to fly due to inclement weather or other reasons. If during a flight the conditions degrade below standard conditions, the flight will be terminated as quickly and safely as possible.

4.3.3 Risk: Loss of Sight

Mitigation: During a loss of sight of the sUAS the following procedure will be executed:

1. Communicate with any VOs to see if they can see it. If so, resume normal operation if able or return to a location with better visibility.
2. If there is still loss of sight, use the ground control station (GCS) to execute a flight path to return to the Rally Point.
3. If the VOs or PIC are unable to see the sUAS after this, then the pilot will take manual control.
4. The PIC will descend the sUAS at a slow rate until it is again visible or it lands.

4.3.4 Risk: Emergency Assumption of Control or Flyaway Situation

Mitigation: During an emergency assumption of control or flyaway situation the following procedure will be executed:

1. Verbally warn any unsuspecting bystanders (most of the time our burn areas are closed to the public).
2. Remotely disable further drops of ignition devices with a radio command.
3. If there is any concern that the sUAS is not flying the programmed mission, the operator will take manual control of the sUAS, return it to the Rally Point if able, and land it.

There may be minor problems that do not require emergency assumption of control. In these cases, the GCS communication can direct the sUAS to land or manually land the sUAS.

The sUAS will execute its Return-to-Home program if communications are lost, so it is unlikely that it will exit the operational flight area. However, if it does exit the operational flight area and does not respond to control commands, we will attempt to maintain visual surveillance to track the vehicle, we will notify ATC and nearby airports, and we will notify local fire departments if conducting ignitions. (Note: The flight time of the Matrice 600 is under 40 minutes, which would limit the search area for a flyaway vehicle.) We also equip all our sUAS with a VHF Tracking Beacon much like those used for wildlife study that our fire radios can tune in.

4.3.5 Risk: Loss of Power/Motor

Mitigation: If there is a loss of power or motor the PIC will attempt control the sUAS to land in a safe area. The PIC, VO, and fire safety person will verbally warn any unsuspecting bystanders. Fire personnel typically have radios or other communication mechanisms and the FIRB person can use these to quickly alert the fire personnel.

4.3.6 Risk: Inflight Fire

Mitigation: In the case of an inflight fire the following procedure will be executed:

1. Verbally warn any unsuspecting bystanders. (most of the time our burn areas are closed to the public.)
2. The pilot will take manual control with RC and land the sUAS in the designated Rally Point or if not possible, the nearest and safest landing zone. We specifically consider any target burn locations as a safe landing zone in case of an inflight fire since this is an area that is already verified as a safe to burn location. In this case we consider the vehicle expendable to maintain the safety of the operators and surroundings.
3. The safety person will contact the local fire department and/or point of contact as designated in the burn permits.

4.3.7 Risk: Hung PSDs

Mitigation: A hung PSD primarily presents a risk if it has already been injected but is not able to be ejected from the vehicle. In this case, there is between 30-60 seconds before ignition will occur. The ignition system has onboard software and sensors to detect jams and to determine if the PSD has been injected. If the hung PSD has not been injected, then the PIC will terminate flight and return to the Rally Point as quickly and safely as possible. If the hung PSD has been injected, the following emergency procedure will be executed:

1. Verbally warn any unsuspecting bystanders (most of the time our burn areas are closed to the public).
2. If time allows, move the vehicle to a location where fire ignition and ejection of the ignition mechanism poses low risk (e.g. away from people and within the established burn perimeter).
3. Remotely trigger the emergency ejection system that will release and drop the complete ignition mechanism from the UAS.
4. The pilot will take manual control and land the sUAS in the designated Rally Point or if not possible or safe, the nearest and safest landing zone.
5. In the case that the hung PSD does not release, then we will follow the Inflight Fire procedure.

4.3.8 Risk: Fire Exceeds Planned Boundaries

Mitigation: During the planning and briefing phases of prescribed fires, plans are made to address potential fires that exceed the planned boundaries of the prescribed fire. This is commonly known as a spot fire or slop over the Prescribed Fire Burn Plan has a holding plan and Contingency plan for such events. This could occur due to perimeter ignitions from the fire fighters or possibly from improperly executed ignitions by the PIC. In either case, the following procedure will be executed to remove the sUAS from the operational area:

1. Verbally warn any unsuspecting bystanders (most of the time our fire areas are closed to the public).
2. The pilot will immediately land the sUAS in the designated Rally Point or if not possible, the nearest and safest landing zone to terminate all flight activities.
3. The FIRB will contact the local fire department and/or point of contact as designated in the burn permits.

5. Regulations From Which Exemption is Sought

TPWD, seeks relief from the following regulations in 14 CFR §107 and 14 CFR §137. If in the analysis of this Petition the FAA rules that these operations are not agricultural aircraft operations and do not fall under 14 CFR §137, then we do not need relief from any parts of 14 CFR §137.

5.1 14 CFR §107.36 Carriage of hazardous material.

107.36 Carriage of hazardous material.

A small unmanned aircraft may not carry hazardous material. For purposes of this section, the term hazardous material is defined in 49 CFR 171.8.

The PSDs and liquid (to be described in more detail next) are already carried and deployed by manned aircraft performing prescribed fires (see <http://www.sei-ind.com/products/premo-fire-balls> for information on one common PSD). Each PSD contains approximately 3 grams of potassium permanganate, which means that the sUAS will carry less than 1kg of potassium permanganate in total. Typical manned aircraft performing ignition typically carry 5-10kg of potassium permanganate in PSDs. Similarly, our sUAS will carry less than 1L of ethylene glycol liquid, compared to 5-10L carried by manned aircraft performing ignitions. The quantity of ignition spheres and liquid carried by the sUAS will be significantly less than those carried by manned aircraft. As such, we request relief from 14 CFR §107.36 to carry materials needed for ignitions, if they are deemed hazardous materials, to perform the proposed operations in this Petition.

5.2 14 CFR §137.19(c) Certification requirements. (c) Commercial operator-pilots.

137.19 Certification requirements.

(c) Commercial operator-pilots. The applicant must have available the services of at least one person who holds a current U.S. commercial or airline transport pilot certificate and who is properly rated for the aircraft to be used. The applicant himself may be the person available.

All of our PICs will hold Remote Pilot in Command certificates pursuant to 14 CFR §107. Part 107 certificates are intended to permit commercial UAS operations and to replace the need for a commercial certificate under 14 CFR §61 when conducting operations for hire. As discussed in Section 4 of this Petition, we have integrated significant training and safety elements into the operation of our sUAS that go beyond the requirements of Part 107 to ensure that the proposed operations will at least equal the safety provided by existing rules. This includes establishing proficiency, experience, and currency requirements that are similar to those in Part 61. In addition, the Petitioner will demonstrate the practical skills required by 14 CFR §137 prior to conducting agricultural operations. As such, we request relief from 14 CFR §137.19(c) that at least one person hold a current U.S. commercial or airline transport pilot certificate to allow the proposed operations with a part 107 certificate.

5.3 14 CFR §137.41(c) Personnel. (c) Pilot in command.

137.41 Personnel.

(c) Pilot in command. No person may act as pilot in command of an aircraft unless he holds a pilot certificate and rating prescribed by 137.19 (b) or (c), as appropriate to the type of operation conducted. In addition, he must demonstrate to the holder of the Agricultural Aircraft Operator Certificate conducting the operation that he has met the knowledge and skill requirements of 137.19(e). If the holder of that certificate has designated a person under 137.19(e) to supervise his agricultural aircraft operations the demonstration must be made to the person so designated. However, a demonstration of the knowledge and skill requirement is not necessary for any pilot in command who -

(1) Is, at the time of the filing of an application by an agricultural aircraft operator, working as a pilot in command for that operator; and

(2) Has a record of operation under that applicant that does not disclose any question regarding the safety of his flight operations or his competence in dispensing agricultural materials or chemicals.

We seek relief from the pilot certification requirements of 14 CFR §137.41(c) for the same reasons as described in the request above for relief from 14 CFR §137.19(c).

5.4 14 CFR §137.19(d) Certification requirements. (d) Aircraft.
137.19 Certification requirements.

(d) Aircraft. The applicant must have at least one certificated and airworthy aircraft, equipped for agricultural operation.

The sUAS we operate is in condition for safe operation based on thorough pre-flight inspection and compliance with operating documents as described in Section 4 and are operated in compliance with Part 107 (specifically part 107.15 which prohibits operation of a sUAS unless it is in a safe condition and part 107.49 that requires a preflight inspection prior to each flight). Because 14 CFR §107 does not require an airworthiness certificate for operation, we request relief from 14 CFR §137.19(d).

5.5 14 CFR §137.31(a) & (b) Aircraft requirements.
137.31 Aircraft requirements.

No person may operate an aircraft unless that aircraft

(a) Meets the requirements of 137.19(d); and

(b) Is equipped with a suitable and properly installed shoulder harness for use by each pilot.

We request relief from 14 CFR §137.31(a) for the same reasons as discussed above for the relief of 14 CFR §137.19(d).

We request relief from 14 CFR §137.31(b) since there is no pilot aboard the sUAS so having a

shoulder harness is not relevant and does not increase safety.

5.6 14 CFR §137.42 Fastening of safety belts and shoulder harnesses.

137.42 Fastening of safety belts and shoulder harnesses.

No person may operate an aircraft in operations required to be conducted under part 137 without a safety belt and shoulder harness properly secured about that person except that the shoulder harness need not be fastened if that person would be unable to perform required duties with the shoulder harness fastened.

We request relief from 14 CFR §137.42 for the same reasons as the relief request for 14 CFR §137.31(b) as there is no pilot aboard the sUAS.

5.7 14 CFR §137.19(e)2 (ii),(iii), (iv), and (v) Certification requirements. (e) Knowledge and skill tests.

137.19 Certification requirements.

(e) Knowledge and skill tests. The applicant must show, or have the person who is designated as the chief supervisor of agricultural aircraft operations for him show, that he has satisfactory knowledge and skill regarding agricultural aircraft operations, as described in paragraphs (e) (1) and (2) of this section.

(2) The test of skill consists of the following maneuvers that must be shown in any of the aircraft specified in paragraph (d) of this section, and at that aircraft's maximum certificated take-off weight, or the maximum weight established for the special purpose load, whichever is greater:

(i) Short-field and soft-field takeoffs (airplanes and gyroplanes only).

(ii) Approaches to the working area.

(iii) Flare-outs.

(iv) Swath runs.

(v) Pullups and turnarounds.

(vi) Rapid deceleration (quick stops) in helicopters only.

We request relief from 14 CFR §137.19(e)2 (ii),(iii), (iv), and (v) as the demonstrations of these skills are not compatible or applicable to the operation of the DJI Matrice 600 in the context of the proposed operations. As discussed in Section 4, we have put in place training and operational procedures to provide the needed skills to operate the sUAS safely. Granting relief from the demonstration of approaches to the working area, flare-outs, pullups, swath runs, and turnaround will not adversely impact safety.

5.8 14 CFR §137.33(a) Carrying of certificate.

137.33 Carrying of certificate.

(a) No person may operate an aircraft unless a facsimile of the agricultural aircraft operator certificate, under which the operation

is conducted, is carried on that aircraft. The facsimile shall be presented for inspection upon the request of the Administrator or any Federal, State, or local law enforcement officer.

We request relief from 14 CFR §137.33(a), which requires carrying a copy of the agricultural aircraft certificate onboard the aircraft. The PIC will comply with 14 CFR §107.13, which references §91.203, and requires registration of all sUAS and that the registration be kept in a location accessible to the remote PIC. The copies of the agricultural aircraft operator certificate will similarly be kept in a location accessible to the PIC.

6 Unanticipated Exemption Requirements

TPWD, attempted to identify the appropriate FAA regulations in order to create this Petition. Below are specific regulations that we have identified as not needing relief from for the proposed operations in this Petition; however, should the FAA determine that these or other regulations might apply to the intended operations described by this Petition and are not addressed or explicitly named, we further request that our Petition be deemed to seek exemption from any such other regulations for the reasons established above.

6.1 14 CFR §107.23(b) Hazardous operation.

107.23 Hazardous operation

No person may:

- (a) Operate a small unmanned aircraft system in a careless or reckless manner so as to endanger the life or property of another; or*
- (b) Allow an object to be dropped from a small unmanned aircraft in a manner that creates an undue hazard to persons or property.*

We are taking reasonable precautions, as discussed in Section 4, when dropping objects to avoid undue hazard to persons and property. If the FAA determines that this regulation would restrict the operations proposed in this Petition, we would additionally seek relief from 14 CFR §107.23(b) for the reasons established above.

6.2 14 CFR §91.15 Dropping Objects.

91.15 Dropping objects.

No pilot in command of a civil aircraft may allow any object to be dropped from that aircraft in flight that creates a hazard to persons or property. However, this section does not prohibit the dropping of any object if reasonable precautions are taken to avoid injury or damage to persons or property.

For the same reasons as those discussed for 14 CFR §107.23(b), we do not believe that this regulation would restrict the operations proposed in this Petition; however, if the FAA determines that this would restrict the operations proposed, we would additionally seek relief from 14 CFR §91.15 for the reasons established above.

6.3 49 CFR §175.1 Purpose, scope and applicability.

175.1 Purpose, scope and applicability.

(a) This part prescribes requirements that apply to the transportation of hazardous materials in commerce aboard (including attached to or suspended from) aircraft. The requirements in this part are in addition to other requirements contained in parts 171, 172, 173, 178, and 180 of this subchapter.

...

(d) The requirements of this subchapter do not apply to transportation of hazardous material in support of dedicated air ambulance, firefighting, or search and rescue operations performed in compliance with the operator requirements under federal air regulations, title 14 of the CFR.

We find that the requirements of subchapter 49 CFR §175 Subpart A do not apply to the proposed operations as it falls under 49 CFR §175.1(d) as not applying to the transportation of hazardous materials in support of firefighting. If the FAA determines that this regulation would restrict the operations proposed in this Petition, we would additionally seek relief from relevant sections of 49 CFR §175 as needed to perform these operations for the reasons established above.

7 Summary for Publication in the Federal Register

TPWD, an operator of sUAS is applying for an exemption from 14 CFR §107.36; §137.19(c); §137.41(c); §137.19(d); §137.31(a) and (b); §137.42; §137.19(e)(2)(ii), (iii), (iv), and (v); and §137.33(a) to operate a sUAS for commercial agricultural related services for prescribed fire ignition.

8 Conclusion

TPWD, hereby requests to renew previously granted exemptions from the regulatory provisions discussed above. Such exemptions are in the public interest and will significantly increase the safety of interior ignitions for prescribed fires, which is the most dangerous part of prescribed fires. In addition, this will significantly increase the safety, reduce the cost, and increase the availability of aerial ignition. As discussed in detail, granting this exemption will not adversely affect the safety because the exemption will provide a level of safety greater than or equal to the existing rules.

Please feel free to contact me with any questions or if I can be of any assistance to further expedite this petition.

Sincerely,

A handwritten signature in blue ink, appearing to read "Chris M. Schenck", is written over a faint, light blue rectangular stamp or watermark.

Chris M. Schenck
Texas Parks and Wildlife Department
Wildlife Division
State Fire Program Leader
Email: chris.schenck@tpwd.texas.gov
Phone: 903-343-2437

Enclosures x

cc: Houston FSDO